

NOTICES TO CORRESPONDENTS.

LONDON AND MANCHESTER RAILWAY DISCREPANCY.—The report in our columns of to-day of a meeting held at Chislehurst for the purpose of settling the discrepancy between the two accounts of the railway, is a very interesting one. It is a pity that the report is so short, and that the details of the proceedings are so meagre. Surely some of the points raised by the projectors for preliminary expenses, without sending round the "begging box," we thought the system was confined to the Sister Isle.

FOREIGN CORRESPONDENCE.—The parcel from Hamburg, conveying Chap 1, came safe to hand. We shall be glad to receive Chap 2, which our correspondent represents as being the better half. The subject shall have our best attention.

"MADON."—Absence from town must plead our excuse in this, as in several other cases, for not acknowledging favours received.

MINING SOLUTION OF MINING PROBLEMS.—"T. W. M." is informed, that the communication referred to will appear in an early Number—probably in our next.

WE ARE INDEBTED to our contemporary, the *West Briton*, for the report of Mr. Thomas's excellent lecture on the Continental Methods of Assaying, inserted in another part of our Journal.

"ONE OF OUR EARLIEST SUBSCRIBERS" will find the information he requires in our last page, and which will be given weekly.

IN OUR NOTICE of Mr. Whishaw's *Railways of Great Britain and Ireland*, last week, Mr. Wenig is represented as publisher—we are requested to state, the work was published by Messrs. Simpkin and Marshall, Stationers' Hall Court.

ERRATUM.—In the article on Subterranean Surveying, in last week's Journal, the line from end, for "the magnetic meridian would vitiate," read "the magnetic meridian would not vitiate," &c.

MR. A. T. J. MARTIN'S "Boring and Blasting" next week.

Several communications, with much miscellaneous information, unavoidably postponed.

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, JANUARY 30, 1841.

The importance to be attached to all legislative enact calculated to affect the mining or manufacturing industry of this country, renders it essentially necessary that the agitation of any question bearing thereon, however vague or indefinite in its proposition, should be watched with a jealous care. It is hardly necessary to observe, that any alteration in those laws and customs by which our trade and commerce have been governed, without just and sufficient grounds, would be of serious evil, for it is the security afforded by such, and to their continuity, that the capitalist, the miner, and the manufacturer, have relied upon with confidence in embarking capital and enterprise in the pursuit of their several vocations. We have, then, to direct attention to the several letters of Correspondents in our columns to-day, treating on the proposed alterations in the import duties on foreign ores and metals, founded on the report of the committee of last session—the evidence given before whom (which will appear in our next Journal), being, in our opinion, most inconclusive. We do not propose, on the present occasion, to enter into the merits of the question, as, to perfectly comprehend the subject, it is desirable that we should lay before our readers such statistical details as may enable them to arrive at fair conclusions. It, however, behoves us at once to arouse the Mining Interest of Great Britain and Ireland to a sense of the impending danger, as we can state, on undoubted authority, that Government contemplates reducing the duty on the importation of all foreign metals to a mere nominal charge, hardly worth the cost of collecting, without the influx of foreign produce should become so great as to annihilate the mining interest of this country. Those associated with mining in Cornwall (and we would direct attention more particularly to its in mines) are the best able to draw the just and proper conclusion, and it is to them Government should look for advice and counsel in considering a measure which, if successful, involves the total ruin of those who have embarked their capital in mining operations, while its effect will be to throw out of employment tens and hundreds of thousands of families, who are alone dependent on our mines. If we imagine the introduction of foreign tin at twenty shillings duty instead of fifteen pounds, the fate of those embarked in undertakings of this nature is too apparent. With respect to our copper mines, both in this country and the Sister Isle, the admission of foreign copper at a mere nominal duty must have a serious effect. Most certainly, time brings about strange changes, and no one affords better illustration than the circumstance of 15s. per ton being imposed as a duty on all ores imported into this country from Ireland previous to the Union, which, at a produce of 8s. is equal to nearly 100 per cent; and now that Ireland is producing largely from her mines, giving employment to tens of thousands of her hard peasantry, who would otherwise be starving, we find that Government proposes to let in upon the English market the manufactured metal of other countries.

We defer, until our next, entering fully into the subject, when we hope to be able to present to our readers an abstract of the evidence given before the committee, with tabular statements of returns from our mines, comparative prices, imports of foreign ores and metals with our exports—all which are necessary, to enable our readers to take a comprehensive view of the real importance of the question. In the meantime, we court the assistance of our many valuable Correspondents, for we feel that it requires not only the good wishes, but the active co-operation of "one and all."

We have, on more than one occasion, expressed our regret, that questions of a personal nature should form subject matter of discussion in our columns, except when some crying evil (such as the Talacre job) renders it necessary to expose to the public gaze the acts of those which will not bear the light. We felt it a duty to give insertion to the letters which have appeared on subject of expenses incurred for the London office of the Trevelyan Mine, and the services rendered by Mr. CURRY, as the representative of the adventurers, because we considered if any flagrant act had been committed by that gentleman—if that waste of money was incurred in keeping up a useless establishment—or, rather, if such should be the opinion of a majority of the adventurers, it was only meet that the question should be fairly brought forward and canvassed—such has been the case, and we congratulate Mr. CURRY on the triumphant result of the meeting of the adventurers, a brief notice of which we have recorded.

It must be to that gentleman a gratifying testimony of the high opinion entertained of him in the performance of the duties devolving on him, while it at once gives a death-blow to the attempt of abolishing London establishments, so desirable as a check on the expenditure and the accuracy of the accounts, and also affording facilities for the acquirement of information on part of the out-adventurers. The very proposition of obtaining gratuitous services we are glad to find scouted, and regret it should ever have been mooted. The unity of opinion expressed by the Cornish and London adventurers is pleasing, as affording evidence of the desire on the parts of the last not to exclude the costs from deriving every information.

It is gratifying to find that the sulphur trade, or rather, we should say, the use of sulphur ores in this country continues to advance, and every inquiry we have instituted, and they have been many, both in the mining districts and of the principal consumers, confirm the opinion we have so frequently expressed—that his Volcanic Majesty, the King of the Two Sicilies, may sit down quietly, and not only make up his mind to the loss of his money in making reparation for breach of national faith, but also all the contemplated income arising from the duty imposed on the export of sulphur from his dominions; while he will further find, that his policy will have the effect of throwing out of employment thousands of families who were before dependent on the mines. This lesson will, we hope, not be lost on our own Government, who, as observed in another place, by way of encouragement to

mining industry at home, propose to admit foreign ores and metals free, or nearly so; and we should not be surprised if one of the sons of St. Stephen's were further to suggest, that an export duty should be imposed on all British metals.

However, matters, as regards the sulphur ores of England and Ireland, look cheerily—communications have been opened with France, Holland, and Portugal, and shipments of ore already made. An eminent house in the North has entered into an engagement with one mine, in the county Wicklow, to take, in addition to their ordinary consumption of sulphur ore, 600 tons per month of the poor copper ores, from which they extract the sulphur, and afterwards obtain the ore by a patented process, and this contract extends over a period of two years—thus comprehending nearly 15,000 tons. Other mines are under heavy contracts to supply, while increased workings, by erection of engines, sinking new shafts, extending levels, &c., evince the confidence entertained, by those most competent to judge of the lasting nature of this mode of manufacture, as affording economy and time over the old process—prices are steadily maintained, and the miners and manufacturers are, we are well pleased to find, well satisfied with each other.

We invite attention to a paragraph, extracted from a contemporary, having reference to the "Eastern Coast of Central America Commercial and Agricultural Company," of which a voluminous report, with maps, plans, copies of charter in Spanish and English, is now before us. It will be observed, by reference to the paragraph in question, that the Constituent Assembly of the state of Guatemala have declined to ratify the grant, and have declared the conditional agreement to be null and void. Here is another instance of the manner in which companies are formed, and the public gulled by misrepresentation, and which will, we trust, be inquired into by the worthy alderman to whom the public are indebted for the late *exposé* at the Mansion-house. For the information of that gentleman, we quote the names of the directors, from the list prefixed to the report:—DAVID POLLOCK, Esq., Q.C., PETER HARRISS ARBOTT, Esq., late of the "Adelaide Gallery" and "Abbotsville," Captain P. D. BINGHAM, R.N., JOHN SPURGIN, Esq., M.D., with Messrs. C. BOURJOY, JOHN DAWSON, WILLIAM HOOD, and ADAM MURRAY. The report presents some rare "tit-bits," which we purpose extracting as useful data for the uninitiated, who may adopt them or not, as they think fit, in the concoction of any similar undertaking. They are too good to be separated, and they will not spoil by keeping.

The numerous abuses which have been proved to exist in the concoction of Joint-Stock undertakings, whether Mining, Bank, or Assurance Companies, by the several inquiries instituted, or the exposures published through the *Mining Journal*, have now risen to such a height, that we feel Parliament is called upon to take some notice, more especially when the companies practise their fraud and chicanery under the protection of an Act of Parliament or Charter. It is but a short time since that the fraudulent system of the British and Australasian Bank was exposed, and within the past ten days another instance is afforded in the Independent and West Middlesex Assurance Company, in which the public have been mulcted of from 150,000*l.* to 200,000*l.* It appears to us that Insurance Companies are the first which should be enquired into: the assurers have no knowledge of the manner in which the funds are applied, or what security there is after their demise for the payment of the policy. We have heard some strange stories, which we shall in due time present to our readers, for their especial information and guidance.

IMPROVEMENT IN STEAM NAVIGATION.

Everything tending to simplify, and, consequently, to improve, steam communication, whether by land or water, is deserving of attention, for, until some other motive power supersedes steam, we may indulge in the hopes which results have shown not to have been vainly entertained heretofore—that many improvements will be effected by the ingenuity of man, and the further application of science. Our attention has been drawn to this subject by the prospectus of Mr. George Rennie's "Patent Trapezium Paddle-Wheels," which may be said to differ only from the common paddle-wheel in the form of its floats, which are trapezoidal, or spear-shaped, the main advantages attendant on which are the reduction of the width of the wheel one-half, and in like manner reducing its weight in the same proportion. The invention is ingenious, and the experiments made are reported to have been highly satisfactory.

FINAL SELECTION OF DARTMOUTH AS THE PACKET STATION.—By the annexed official notice from the Treasury, which has just been issued, it would appear that Dartmouth has been finally selected as the port of departure, at least so far as the West India mails are concerned; and it is a prevalent opinion in the city that the Lords of the Treasury intend gradually to send off the whole of the sea mails from that port:—

"Treasury Chambers, Jan. 23.
"GENTLEMEN.—I am commanded by the Lords Commissioners of Her Majesty's Treasury to acquaint you, that my Lords having had under full consideration the report of the committee appointed to examine and report on the different harbours, and their merits as stations for the embarkation of the West India mails, and also the several papers and memorials on the same subject, are of opinion that the selection of the committee should be adopted, and that the port of Dartmouth should be selected as the port where the West India mail shall be sent on board the steamers.
"I am, Gentlemen, your obedient servant."
"R. GORDON."

EASTERN COAST OF CENTRAL AMERICA.—The Constituent Assembly of the State of Guatemala having, on the 27th of October last, taken into consideration a conditional grant of land to Mr. Young Anderson, as agent of a company in London, styled the Eastern Coast of Central America Commercial and Agricultural Company, and also the report of a committee specially appointed to inquire into the matter, in conformity with their recommendation, and upon the reasons therewith given of the serious inconveniences which would follow its confirmation, declined to ratify it, and declared the conditional agreement to be null and void. The official document announcing this decision was signed in the Session Hall of the Assembly on the above day, by Miguel Larreyague, president, also by the two secretaries, and countersigned at the Government house on the following day by Mariano Rivera Paz. *Eastern Counties Herald.*

ARCHIMIDES' SCREW.—The *Liverpool Standard* has devoted considerable space to a clear and circumstantial account of this important invention. "We have much satisfaction (says the *Standard*) in stating, that the Government have at length decided on adopting it into the navy." We are not aware what grounds there may be for such a rumour, but we believe that measures have already been taken on the Continent for the construction of several steamers on the principle of the *Archimedes*. In Bremen a company has been formed for the construction of several large steamers propelled by the screw, and as soon as the vessels are ready, they are intended to run regularly between that city and New York.

THAMES TUNNEL.—The shaft on the Wapping shore, in which a foot-way descent is to be made into the Thames Tunnel, is proceeding very rapidly, and as it is built above ground, presents a very commanding appearance, and will be gradually sunk. The works below have been for some time suspended, the tunnel having been completed to within the limits of the company's wharf on the Middlesex shore, far beyond the low-water mark. When the shaft is completed on the north side the excavations will be resumed; and, as there is now no fear of another interruption, the remaining portion of the tunnel can be completed in a few weeks. It is confidently expected that the tunnel will be opened for foot passengers on or before next July. The arches of the tunnel are in a sound state, and bear evidence of the care taken in the execution of this great and expensive undertaking.

REGULATION OF RAILWAYS.—Notice was given, in the House of Commons, on Tuesday, that Mr. Labouchere would, on the 4th of February, move for leave to bring in a bill for the better regulation of railways.

INDUSTRIAL INK.—M. Besenger recommends the following materials for the purpose:—Soot, heated with caustic soda, gelatine, and caustic soda. Its properties are very similar to China ink.

ORIGINAL CORRESPONDENCE.

PROBABLE EFFECTS ON ALTERATION IN DUTIES ON FOREIGN METALS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—The part you take in the protection of the mining interest, induces me to call your serious attention, and, through your useful Journal, the attention of all those interested, to the proposed reduction of duty on copper and copper ore, and metals and minerals of all kinds, raw or smelted. In the minutes of evidence, taken before the Select Committee of the House of Commons, to inquire into the several duties levied on imports into the United Kingdom, on the 16th July, 1840, you will find the evidence of J. D. Hume, Esq.—1182. Mr. Blake (one of the committee) asks—"If the duty on importation of copper was removed, do you think that would interfere with the mining interests in this country?"—I think that it would probably interfere with some of the poorer mines, but the great advantage would be a difference of quality, as well as quantity, there being a diversity of metals, each best suitable to some particular purpose." That part which particularly relates to reduction of duty on copper, and injury to the mines of the United Kingdom, will be found in 1182, 1183, and 1184, in the evidence alluded to.

You must be aware, Sir, that had evidence been taken of those well acquainted with the working of our mines of copper, tin, and lead alone, it would have shown, that reducing the import duty of these metals and the ores thereof to 1 per cent. *ad valorem*, would be the destruction of nearly all our mines; and I think I am within the mark, when I say, throw out of employment little short of 150,000 persons.

It is stated that the revenue for 1839, arising from duties on metals and minerals, was 33,170*l.*, and the estimated duty on the proposed scale will be 50,000*l.*; now, this (if correct) would show that metals and minerals, to the value of 5,000,000*l.* sterling, would be imported; and as silver and gold, and their ores, are entered as bullion, and pay no duty (which I imagine is not intended to be altered), must chiefly refer to the importation of copper, tin, lead, and zinc, and their ores, which cannot be contemplated without the total destruction of nine mines out of ten in this country. I could observe much on the subject, but leave it in your more able hands to bring more fully before the mining interest.

Remaining your obedient servant,
PERCIVAL N. JOHNSON.

Assay office, 79, Hatton-garden, London, Jan. 29.

[We are obliged to our correspondent for directing attention to the subject of his letter, which, however, had not escaped notice; the movement is of a quiet nature, and, we regret that the evidence taken before the Committee was not more general. We fear there is some job in view, and need hardly say it requires much attention and cautious observation on the part of the miner, and who, we trust, will not lose sight of the project, which will, undoubtedly, be submitted to the consideration of Parliament. The Cornish members, whatever may be their political sentiments, are bound to protect the interests of the home miner. Some further observations will be found in another column.]

PROPOSED ALTERATIONS IN THE CUSTOMS DUTIES.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—If "the proposed alterations in the Customs duties, presented by Mr. McGregor, one of the joint-secretaries of the Board of Trade, to the committee on import duties," do not immediately rouse the whole British mining interest in its own defence, that interest, should the proposed alterations take place, will soon cease to exist. Further protection will also be, probably, extended to the copper produced by slave labour, to the great prejudice of the British miner. Earnestly recommending to every miner a perusal of Mr. McGregor's tariff of new duties,

I remain, Sir, your very obedient servant,
J. T. TREVEY.

[The question is one so important, that we feel it the duty of all interested to respond. For ourselves, we shall endeavour, next week, to collate statistical information, on which we may offer some remarks.]

STATE OF THE LAW AFFECTING THE COPPER TRADE.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—It has long been matter of surprise to me that the attention of parties interested has not been more systematically called to the state of the law affecting the copper trade, which stands in need of revision and amendment as much as that relating to any other branch of our commerce and industry—and especially that part of it regulating the importation of foreign ores. It has not, however, it seems, entirely escaped observation, but was alluded to at the meetings lately held of the Santiago and also of the Cobre Mining Companies, as reported in the two last Numbers of your Journal. At the meeting of the former company some of the gentlemen present pointed out a certain alteration which they considered desirable to obtain—viz., permission to export manufactured copper in cancellation of bonds given on importation of ores, instead of being, as at present, compelled to export it in the state of cake. No doubt such an alteration is desirable, but I believe a much more important one might be made, which would be productive of more extended benefit to all parties, and, at the same time, place the trade on a natural foundation, and thus, as far as possible, secure its permanency.

The law, as it stands at present, requires a bond to be given on the importation of a cargo of ore that the quantity of copper it contains shall be lodged in the Queen's warehouse, or exported in the state of cake copper within three months from the date of importation, which is equivalent to being compelled to export it, for the smelters cannot afford to pay cash for ores, and lock up the produce in bonded warehouses. The effect of this regulation is frequently to oblige the smelter to force sales, at low prices, and this, of course, reacts upon the price of ore—and hence the grumbling of the sellers, and the charges they bring against the smelters of combination, &c., whereas, it is only an effect of the unnatural position of the trade from fiscal regulations.

The remedy that I would propose is one which at first sight may startle the shareholders in foreign mines, but I am persuaded it would be beneficial to them, to the British miner, the smelter, the manufacturer of this country, and also to the Chancellor of the Exchequer, and would only act unfavourably on the foreign manufacturer, whose interests I do not think we are bound particularly to consult—at least, not at the expense of our own. The plan is simple—viz., to tax the ore on its importation, and then allow its produce to mingle with our own, without hindrance or regulation of any kind.

In order to show how that which is considered an almost universal evil—viz., a tax—would, in the case before us, be almost a universal good, we must see how the facts of the case stand at present. If we go into a smelter's warehouse at Swansea we may find 100 tons of cake copper; and if we adjourn into his counting-house we may find two gentlemen (or two letters, their representatives) wishing to purchase fifty tons of each. One of these gentlemen is from Birmingham, the other from Paris or Rotterdam. Courtesy requires attention to the stranger first, and fifty tons of cake are sold to him, at 93*l.* per ton, free on board. What, then, is the astonishment of our friend from Birmingham, who finds that he must pay 102*l.* per ton, or go back as he came. He inquires why he is made to fare so ill, in comparison with the foreigner, and is told by the smelter that bonds are pressing—they must be cancelled—that he cannot help himself, and that, therefore, he is content to take nearly 1*l.* per lb. less for the identical article from a French or a Dutchman than from his neighbour. This is no overcharged picture, it is the actual position of the trade at the present moment, and, with little variation, it is its general state.

Now, I would ask the foreign miner—Do you suppose this 1*l.* per lb. eventually goes out of your pockets or out of the smelters?—Out of yours, most assuredly; and it would be 50 per cent. in your favour to pay a tax of 4*l.* per ton of copper to the Government, rather than to throw away 9*l.* per ton on the manufacturer of France and Holland. Then, as to the Birmingham manufacturer of brass, and other things into which copper enters, he will not need much to convince him how little able he is to compete in open markets with those who can buy copper 10 per cent. cheaper than he himself can, and copper, too, that is smelted, as it were, at his own door.

The British miner may be more difficult to convince, but it would, nevertheless, be to his advantage also that foreign ores should be subject to taxation. Say there are 10,000 tons of foreign copper smelted in this country annually, and would it not be better for you that this copper should go forth to the world with 40,000*l.* of taxation upon its shoulders, rather than free, as at present, from any such load? In which condition is it likely to prove the most formidable adversary? Oh! you say, I have

no objection to its being taxed as heavily as you like, and if 4l. per ton is not sufficient put on 8l.—but I object to its being manufactured, and open to use, in this country, in competition with my own produce. On this part of the subject I would observe, that if one article does already compete with another, it matters little where the competition takes place. And if this foreign copper does not already compete in England, it does abroad—if not in the Mother country, it does in her dependencies. The differential duty in India is only 3 per cent., and during the present year considerable quantities of tile copper, the produce of foreign ores, has been sent to Calcutta and Bombay—displacing, of course, an equal quantity of Cornish or Welsh. Nor do I see what is to prevent the roller of copper at Rotterdam buying cake at Swansea, the produce of foreign ores—rolling it into sheathing, and selling it in Bombay and Calcutta, as he is already doing in the Mediterranean, the Brazils, and many other places. If we were a corn exporting country, do you suppose the Corn Laws would be a protection to the former? The smelter would obtain his modicum of the general good, in being enabled to purchase a most desirable class of ores, free from the restraints and perplexities of the system as it stands at present. It will not require any very elaborate argument to persuade the Chancellor of the Exchequer that 40,000l. or 50,000l. per annum would be a desirable addition to his income, and which may be obtained, too, with less trouble than is now given to the subject, though it does not yield a farthing.

By the plan I propose, too, the trade would be placed on a more natural, a more extended, and, consequently, a more permanent basis; but, as illustrations of this would extend my letter to an inconvenient length, and will readily suggest themselves to every one at all conversant with the general principles of commerce, I pass them over.

As to the mode of levying the duty, and the amount of it, I would suggest that the produce of all ores be ascertained as at present, and that those of 10 per cent. and under be admitted duty free.

Above 10 per cent. to 15 per cent., 6d. per unit of produce per ton of ore.					
15	20	7d.	ditto	ditto	
20	25	8d.	ditto	ditto	
25	30	9d.	ditto	ditto	
30	35	10d.	ditto	ditto	
35	40	11d.	ditto	ditto	
40	45	12d.	ditto	ditto	
45	50	13d.	ditto	ditto	
50	55	14d.	ditto	ditto	

To the foreign miner I would further say, that it will be much better for you to pay a direct defined tax to the Custom-house, than an indirect undefined one to unsmooth and harassing fiscal arrangements, to the fears of the smelter, and to the speculation of the foreign buyer, which, taken together, at the present moment, are equal to 9l. per ton of copper on all that you import, and which is never less than 5l. per ton.

As "agitation" is the order of the day, pray, Mr. Editor, lend a hand in agitating this question, and you will oblige.

Liverpool, Jan. 19.

ONE INTERESTED IN THE IMPORTATION OF FOREIGN COPPER ORES.

[The letter of our correspondent having immediate reference to a subject likely to come under the discussion of the Legislature on an early day, and which is directly alluded to by Mr. Trevelyan and Mr. P. N. Johnson in our columns, is one deserving of attention. That some measure will not only be proposed, but, in all probability, carried, we believe no doubt exists, therefore it is highly desirable to acquire information on both sides of the question, and to consider what is best to be done for the protection of the interest of the British miner; at the same time, that the several points advanced calculated to be of advantage to the manufacturer, and the country at large, are equally considered. We are glad to find so intelligent a correspondent in the field, and trust that he will continue to direct his attention to the subject—one which, as we have already said, will come under the notice of the Legislature, and, previous to which, it is highly desirable to collate statistical information, so as to arrive at deductions whereby correct data and evidence may be afforded.]

TREVAEVAN MINE—MR. CURRY'S AGENCY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I am truly glad to congratulate my co-adventurers in Trevaevan at the result of the late meeting on the mine, on Tuesday last, specially convened to take this matter into consideration; the recorded votes was as follows, viz.:

Curry as London agent	73	96 shares
Against the same	14	ditto
Neuter and absent	8	ditto

Total shares..... 96

These recorded votes are, I think, the best answer to all the anonymous correspondence that has of late so frequently appeared in your Journal touching this matter, but which, in my opinion, has partaken too much of a personal nature towards that gentleman—trying thereby to prejudice the merits of the subject in dispute, and which, in common fairness, ought not to have been adopted pending the meeting, which alone was competent to decide on the same. However, leaving to the writers of such anonymous letters all the satisfaction that they may desire by such unfair modes of attack, I must repeat, it is a matter of satisfaction to find that myself and co-adventurers in London are not to be deprived of an office or agent, where we may obtain information as to the state of our investment embarked in this mine. The fullest information to my inquiries at his office, and the punctuality with which I have received my dividends, have at all times been afforded by Mr. Curry to me—indeed, this gentleman has not gratuitously performing the duties of such office seems to have raised the late hubbub against him.

I am, Sir, your obedient servant,

AN ADVENTURER.

[We never entertained a doubt as to the result of the meeting, for we could not contemplate, for one moment, the adventurers in a mine of such magnitude accepting gratuitous services, or abolishing an office in London, which, it is known, has given confidence to the out-adventurers. The union of expression of opinion on the part of the Cornish and out-adventurers must be gratifying to Mr. Curry, for, although, he might have possessed the confidence of the ore, it is no reason he should not have been viewed with an eye of jealousy by the other. Some further remarks on the subject will be found in another column.]

ON THE POWER OF WATER-WHEELS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I am glad to reply to any question arising from my notes on hydraulic engines, provided they be put under a pleasant form. Had your cynical correspondent, "A Miner," supplied his name, its dignity might have inspired one with a disposition to defend; since this is not the case, I shall regard his miscolouring (!) of my work as the daub of a miscreant, and compare statements with other views, than merely to combat one known not whom.

I know by reference what is observed by Smeaton and others, and should question the propriety of running counter to their experience and prescription; but, without logging into your paper a host of opinions that notoriously differ, I have attempted in my own way to furnish the workman with essential views of what water ought to do, and not what it does, in imperfect contrivances. If in such attempts I advance what is wrong, I have no objection to stand corrected. Instead of a tedious recapitulation of my first and second letters, I will premise that therein two things are spoken of—viz., "the method of reducing the extreme fall to the actual one," and "the work done by the real or acting fall under a suitable velocity." In order that his matter, coming, as it seems, from a practical man, may subserve a good cause, I beg to show that we do not differ as much as some men in their opinions. He says that a fall of 15 feet gives 3 horses' power nearly, while I make 17 feet equal to 3½ horses' power full. We infer from him that the extreme fall must be lessened two feet for the real fall—something tantamount to which may be seen in my first notice. Further, the difference of efficiency between over and under-shot wheels is rendered so small on the continent, by, I think, MM. Fourneyron and Poncelet, that I felt borne out in applying the same calculation for each, provided the wheels were of the best construction. It is very possible that the wheels noticed by "A Miner," allowed much water to escape without due action, which is remarkably the case in all that I have seen, which also go much too fast. An under-shot should not move as fast as an over-shot, because the natural speed of water on an inclined plane is not so great as when it proceeds perpendicularly. We might, probably, both of us profit by the remarks of builders of recent and extensive practice abroad.

Now, taking the same ill-fated example in conformity with his own practice, and with my mode of calculation, for the real fall, I have a right

to increase the 3 feet by two feet, that is, five feet for the extreme fall. I propose to treat the real fall in all instances the same, then $3\frac{1}{2} \times 5969 = 4800 = 3\frac{1}{2}$ horses power nearly; in under-shots this allowance of two feet is not usual, then the calculation stands thus, says "A Miner"— $5\frac{1}{2} \times 5969 = 10\frac{1}{2} = 3\frac{1}{2}$ fall, which brings out a difference of result as $3\frac{1}{2}$ and $3\frac{1}{2}$; but I have no objection to differ thus much from him until I know who he is.

We will now proceed to compare two wheels—an under-shot with an overshot—each of 5½ feet extreme fall. Although the two feet can by no means be observed as an allowance for under-shot wheels, something must be deducted from the whole fall, and I would repeat my rule thus:—Drive a nail into the centre of the float-board at where the water impinges—that is, where it has overtaken the velocity of the wheel—and another at the centre of the lowest board. The vertical distance between the two nails comes nearly to the acting fall, which may be treated in all respects as that arising from an overshot.

I do not apprehend any objection to the action of solid bodies being compared to that of solid bodies without friction—thus, suppose three and a half balls per second to pass through the discharging aperture on the wheel. No. 1, whose velocity is such that one ball shall fall into each bucket; let the whole weight of each ball be represented by its diameter of one foot, then the expense would be three and a half per second falling perpendicular; but three and a half diameters, or feet, is the fall, or mean diameter, of the wheel—therefore, we have to prove that the number of balls through the semicircle exert the same tangential and vertical force. "A Miner" will admit that the tangential forces of the balls in their respective positions, independently of friction, are the black sides of the triangles, and that these added give the amount of force always at the rim of the wheel; and, as they compose a line A B, equal the diameter of the wheel, 3½ units, this multiplied by the velocity of 3½ feet, is 12½ units of work done per second. Again, the main fall is to be the same with No. 2, but, as the slanting route of the water is twice as long for the same vertical height, the velocity should be twice less: for this reason there will be two balls in each bucket through twice the length—that is, twenty-two balls simultaneously acting instead of five and a half, and this, with the same flow; then the sum of these forces compose a line or force C D, which is twice A B, or 7 units; this multiplied by the velocity due to the plane, 1½, or half of first velocity, gives 12½, as before.

It will not be my plan hereafter to give such unpopular demonstrations; the above is for your correspondent only, and if he has the sagacity, that an underground miner, in the dark, ought to have, he will understand it.

Tuckermill, Jan. 21.

P.S. Why did not "A Miner" finish his work in reply to "M. F."?

[We hope our correspondent and "A Miner" will understand each other, and doubt not but that our readers will derive benefit from the discussion.]

ON MINE SURVEYING.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Since my communication on mine surveying an experiment has been made, which is corroborative of the principles there laid down. The survey was taken with a plain theodolite, manufactured by the celebrated Cary, of London; it was without a vernier, and the needle (constructed on the recent improvement suggested by Professor Barlow, when comparing the directive power of various magnetic needles for the British Government) was distinguished alike for delicacy on the pivot and general accuracy; the only error perceptible in the whole instrument was in its graduation, which had not been so executed as for both poles of the needle to correspond with the same points in the diametrically opposite graduations; this, however, although most important in performing the work, with the aid of the logarithmic tables, does not interfere, that I am aware of, with the mechanical method. The chain was a superior one, made of brass, and graduated into fathoms by that accurate, and now popular, artist, Wilton, of St. Day, in this county. The spot selected was nearly parallel to the plane of the horizon, and as free from inequalities as possible—while the weather, with an almost imperceptible wind, S.E. by E., one-half E. (I cannot exactly state), presented a rather unusually fine appearance for this season of the year.

With the instrument on A, as represented in the accompanying diagram, bearing from the north point 53 deg. east, and distance 9 fms. 1 ft. from thence to B, bearing 40 deg.—distance 7 fms. 3 ft.—completing it by bearing from C to D, 350 deg., at a distance of 5 fms. 2 ft., which stated as follows:—The sine A + sine B = sine C—the rectangular co-ordinate east = E; also cosine A + cosine B + cosine C—the rectangular co-ordinate north = W; and $\sqrt{W^2 + E^2}$ —the hypotenusal line = say D;

then the sine A + sine B—since C—the logarithm of the $\angle A D$ —

34° 16', the hypotenusal line on the $\angle 34^\circ 15' = 19.95$ fathoms; the meridional line north 16.509 fathoms, and the perpendicular east 11.215 fathoms, is agreeable to the following table and diagram:—

Bearing by N. point of meridian in mag. angle.	Distance from the meridian in fathoms.	W.	E.	Perpend. from the hypo. to the base.	Length of the hypo. in fms.
A. 53 15	9.1	7.519	5.16	34.15	19.95
B. 73 30	7.3	4.921	5.43	37.43	19.43
C. 350 00	5.2	9.250	0.748	—	—
		12.149	16.509		
		19.95			

It was calculated that, as the survey was made with great care, there would be no sensible difference between the various methods adopted; the following, however, were the results:—The dial pointing due north

16.509 fathoms, and then east 11.215 fathoms, fell short of D eight inches. On the diagonal line bearing from A $34^\circ 15'$ the distance A to D = 19.95 fathoms, it fell two inches beyond D; but repeating the distances and bearings by the mechanical method, it fell only one inch east of D—so much for this "wretched practice."

I would just observe that, to the practical miner, this subject, from the commencement, has been sufficiently amusing, and has found much work, no doubt, for his risible faculties, but he will not think of allowing his method (as it is styled) to become obsolete, until persuaded to it by argument instead of raving, and by individuals whose classical attainments entitle them to his respect. We ask no favour, the matter is now before a discerning public—let them condescend to make the trial for themselves, and we have no fear as to the result.

I remain, Sir, most respectfully, your's, &c.,
Breeze, Helstone, Cornwall, Jan. 19. A CORNISH MINER.

ON THE PRESERVATIVE PROPERTY OF SULPHATE OF COPPER—MR. JOS. MARGARY'S PATENT.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—It is well known to every Cornish miner that the water drawn out of the mines of this county is strongly impregnated with the salts of copper and iron; and it is equally well known that this exercises a very powerful protection on all wood which has been soaked in it; and, for this reason, timber which has been employed in the mines is frequently sought for use in house building, where the approaches of dry-rot are feared. This has been so long and so generally known here, that one of our mine agents, twenty or thirty years since, proposed to the Navy Board the construction of a pond, or other suitable receptacle, at Carnon, for the water flowing out of the Great Gwennap adit, in which to soak the timber used in the Royal Navy. The proposition was discussed, but, for some (or no) reason, was never carried into effect.

This is, I believe, just what Mr. Warburton stated as the result of his experience; but the principle, as I have already said, has for ages been universally known and acted on in Cornwall.

I am, Sir, your most obedient servant,

January 20.

W. H.

[We believe the question as to the validity (not the merits, for such are admitted on all sides) of Mr. Margary's patent or process, depends on whether the artificial solution made by him is entitled to be protected, the application of the sulphate of copper, as naturally produced, being long previously known. It is a fair subject for discussion, and we hope to see it settled. We have much satisfaction in knowing that the publicity given through our columns has very considerably increased its application; and, whether Mr. Margary derives the advantage to which he is in a great measure entitled, if he only in bringing it under public notice—and, we may say, general use (for we understand it is employed by Messrs. Brunel, Locke, and other eminent railway engineers), or that he does not, its value as superseding the expensive process attending Kyan's patent, will be recognised. We should be well pleased to have the opportunity of giving some sound, legal opinion on the question at issue.]

ON ASSAYING COPPER BY ELECTRO-CHEMICAL ACTION.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I regret that your correspondent, "H.," has thought fit to tax me with claiming an undue merit in my process for assaying by galvanism, and had he investigated the subject a little more, he would not, I trust, have done so, for I now attribute his communication to a want of viewing the matter in its proper light, rather than to a love of vexatious annoyance. He refers to Becquerel's work on electricity, vol. iii. ch. 14—the title of which is *Exposé d'une Méthode générale pour obtenir Crystallins le Soufre, le Sulfate et le Carbonate de Baryte*, and bears but little on the present subject. In the next chapter there is more to the purpose, but neither in this, or in any other part of M. B.'s work, does he give a method for assaying ores, and discovering the quantity of metal contained in them; it might as well be said that Professor Daniell's valuable improvements in the galvanic battery were anticipated by M. Becquerel in the same chapters. No one acquainted with the history of electricity would for a moment suppose I intended claiming, as my discovery, the fact, that a base in solution goes to the negative pole, for this is one too long and generally known for the veriest plagiarist to think of bringing forward as new. Sir H. Davy's brilliant discoveries of potassium, &c., depended on this—and who is there that is not acquainted with them?

M. B.'s essay is on detecting the presence of metals in their solutions, and "H." will not maintain that any method laid down by M. Becquerel will give a true assay of the quantity contained in them. What benefit, may I ask, is it to the miner, to know that copper exists in his ore? It is the quantity he seeks to discover. The precipitation of metals from their solutions by others more oxidable than themselves, as described by M. Becquerel, in ch. 15, was known before the science of galvanism—witness the lead and silver tree—and if "H." reads Becquerel on this subject attentively, he will perceive that his process is perfectly inapplicable to ores containing several metals. Again, neither in Becquerel's work, or in any other work or paper ever published, to my knowledge, is laid down the important precaution of assaying for a metal with that metal only as a pos. pole, which is next in affinity for oxygen to the one sought. This precaution may to "H." appear of little consequence, but it makes all the difference between failure and success in an assay, and, if he is practically conversant with the science of electricity, he must know this. But, perhaps my best answer to him will be—Let him assay a copper ore (of course, of unknown constituents) by any method he can find laid down in Becquerel's work, and then tell us of his success. At the same time, I trust he will not, while attacking me by name, remain an anonymous assayer.

Norwood, Jan. 20.

MARTIN J. ROBERTS.

[Our correspondent will, we feel assured, excuse us in remarking on his question, of "what benefit is it to the miner to know that copper exists in his ore?" The period is not very remote when copper ores were disregarded, and, at the present moment, in many instances, we find that ores containing copper assume a character which the practical miner, without the aid of the assayer and metallurgical chemist, could not discover. If, however, as Mr. Roberts states, M. Becquerel's "process is perfectly inapplicable to ores containing several metals," our observation has less force. We may state that "H." is not only "practically conversant with the science of electricity"—some papers written by whom have appeared in our columns—but we are at perfect liberty to give his name, which shall be furnished; his only object being not unnecessarily to thrust himself forward in directing attention to the work of M. Becquerel, which he considered anticipated the results arrived at by Mr. Roberts and Mr. Hyatt.]

ON COLLIERY AND MINE SURVEYING.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I have been much pleased with the different letters which have appeared in your columns on the subject of mine surveying—the several communications afford pretty good evidence of the manner in which such operations are conducted in the localities from which they date. The discussion of this subject in your valuable Journal must be attended with the most beneficial results; and, with the view of keeping alive the interest which appears to be felt on the subject, I take the liberty of addressing a few lines. I must, in the onset, protest against calling hard names, or resorting to offensive expressions, as we all know the prejudices of mankind are deeply rooted, and the statements of the working miner, believing his method of surveying to be accurate, ought to be received with the same candour as the remarks of your more scientific correspondents. I can well imagine that a coal miner, in sinking an air shaft, and finding his operations coinciding with his previous survey, is so satisfied with his own method of dialling, that, to endeavour to convince him that there is a better method is generally a hopeless task. We are all tenacious of the plan we have been long accustomed to, and which we find to wear well—and this attachment to old practices has more or less force in the ratio of our remove from the paths of science. The scientific manner in which the subject has been treated by Mr. Budge and others, is very creditable to the writers, and, I sincerely hope, will tend to introduce the use of mathematics in mine surveying. The variation of the needle alone, I consider quite a sufficient reason for discarding the dial, or circumferentiometer, where accuracy is required; but, for taking up the workings of a colliery, the portability and the saving of time, as compared with the use of the theodolite, have induced me, for common purposes, to retain the former instrument. I consider the dial useful as a general check. I had the superintendence of a curved tunnel for a railway, driven from both ends, which met to the greatest nicety—my plan was, knowing the radius of the curve, to set out each chain, or part of a chain, by measurement, derived from the versed sine of such portion of the curve, and also

to use the dial in determining whether the bearings of the points coincided above and below. I have also known a system of lines adopted, and modern railway practice affords instances of the useless output of thousands, in erecting towers as observatories for guiding the drifts.

Mr. Budge very properly maintains in his letter last week, that "trigonometry, well understood and well applied, is the only certain and infallible guide." I regret that any attempt should be made to depreciate any of the scientific and practical works which have appeared on the subject of mine surveying. I have no doubt the demand for such works will be greatly increased by the correspondence carried on in your Journal. In surface surveys I have always adopted the practice recommended by a correspondent in your last Number—that of obtaining a good datum line, with permanent objects, if possible, and carry on a trigonometrical survey, independent of the magnetic bearing, otherwise than as a check. I would suggest to your correspondents that some instrument is required for taking angles underground—the theodolite in general use for surface work is too large and complicated—the subject is worthy of consideration. I would also mention the subject of plotting angles; I have laid aside the protractor, and if any of your correspondents will state their practice, I shall be happy, at a future time, to give mine.

I am, Sir, your obedient servant,

Newport, Jan. 25.

A CIVIL ENGINEER.

[It is pleasing to find subjects of interest, like the present, eliciting from correspondents, practically acquainted with their merits, continued communications, and thus rendering the columns of the Journal really valuable to the practical man. We have ever found it an arduous task to overcome prejudices with the collier or miner—it is slow work, but, by the fair discussion of the subject, we feel assured that beneficial results will arise. The practice observed in various districts, we need hardly observe, varies considerably, of which the course taken by our several correspondents afford full evidence.]

MINE AND COLLIERY SURVEYING.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—The discussions which have lately taken place in your Journal have not only given it more of the character of a mining paper, but also have rendered it a sort of text book; yet, it is to be wished that the crimi-natory mode of writing, which has from time to time appeared in the Journal, was discontinued. Man is apt to commit himself whenever he undertakes any project without duly considering both sides of the question—how often does he forget that the shield has two sides. Being totally unacquainted with metallic mining, I wrote under the idea that Mr. Budge was speaking of coal mining; had I acted with a little prudence, and asked—Does Mr. Budge mean coal mining? I should have saved myself the trouble of answering him, and he the trouble of replying to me. I always regret the use of scurrilous language when I see it with my mark in print, and could I withdraw it I should readily do so. I consider that man who clouds himself in a false name, and who uses that name solely for the purpose of wounding his fellow-man, an assassin.

Mr. Budge ought, considering the error I was in when writing, and which he readily detected, to have said—"X," you mean one branch of mine surveying and I mean another—I am unacquainted with your's, and, from the tenor of your letter, I conceive you are completely so with mine"—and thus have saved himself the trouble of writing upon a branch of which he says, he knows little or nothing. However, good generally rises out of evil; my object in writing is to ascertain the nature of Mr. Budge's *Miners' Guide*—what is its price, and where it may be had—and the applicability of it to coal mining? I am desirous of knowledge. Is it a sort of a traversing table, similar to those generally found in works on navigation—derived from the doctrine of the composition and resolution of forces? I have been at a little trouble lately in making some tables to facilitate mine surveying, for my own private use, which, being engraved on a quadrant, will show at once the rise per yard per twenty yards, and the perpendicular height at the last distance, which, if not already published in Mr. Budge's work, or elsewhere, you shall have, Mr. Editor, if they will, in your opinion, be of any benefit to the miner.

The thanks of the mining community ought to be given to Mr. Dunn for his gentlemanly conduct in giving to the world the series of papers, diagrams, &c., on ventilation. I should like very well to see mine surveying taken up as regards colliery surveying; it would form good matter for consideration and discussion—it would tend to spread the principles of the art, and would form a base on which the young mine surveyor might raise a superstructure of usefulness and utility.

Burnley, Jan. 26.

I am, Sir, your's, respectfully, X.

[We are pleased to find that "X" does not retort in the like terms adopted by other correspondents; it is at all times painful to observe any thing like recrimination, and which is unnecessary, more especially when the object, on the part of all, is that of eliciting, as well as affording, information. Credit is due to all our correspondents, and they have our thanks, for "service rendered the state," in elucidating observations which tend to the acquisition of information, if even they do not themselves furnish it. With reference to Mr. Budge's work, we shall be happy to obtain a copy and transmit it to our correspondent; and as regards the tables—should they prove not to be similar to those already published, we shall, with pleasure, give them insertion.]

MINERS' SMELTING COMPANY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—So much has already appeared in your columns, and in the *West Briton*, on the subject of the formation of a Mining and Smelting Company, that I fear I may be almost considered intrusive in offering any further remarks upon it. My excuse must be the deep interest I feel in the prosperity of all the parties connected both with the mines and the copper works.

If, as some are led to believe, the smelters have dealt hardly with the miners—if undue advantage has been taken, and unreasonable profits obtained (which would seem to be contradicted by the fact of so many companies having within the last few years withdrawn from the trade), then, indeed, are the adventurers quite right to make such a change, and take such measures as they may deem necessary for the protection of their property, and best calculated to promote their interests. But if, as I have been assured, the price paid for ores has at all times been as high as the price of copper will admit, and frequently even higher—if, moreover, it is the case that on more than one occasion the smelters have made great sacrifices in order to uphold and maintain the mines, preventing a depression of the standard, by which they might have profited, then, certainly, it does appear unwise to disturb a system which has been so long acted upon, one under which the utmost good faith and good will has existed between the parties concerned, and, moreover, one which, to judge from the late great increase of the copper mines, would appear to have contributed most materially to the encouragement of the adventurers, and the increase of business and wealth throughout the county.

That it is by no means clear a union of mining and smelting into one concern will benefit the parties, I think they may be fairly inferred from these two branches of our commerce having hitherto been kept separate and distinct, and this even by gentlemen who were largely concerned in both. Mr. Daniell, Mr. Vivian, and the Messrs. Williams (no mean authorities, let me add, have always sold their ores at the ticketings in common with those of other adventurers, never, I understand, unless under some extraordinary circumstance, having withdrawn a parcel with a view to smelting it themselves; in truth, whilst there is no connection between the two concerns from which we may calculate their being united would be an advantage to both, there is almost a necessary distinction in the manner of transacting the business of each. It would, in fact, be just as reasonable to say that a tanner should be a shoemaker, an ironmaster a blacksmith, or the proprietor of a copper work a manufacturer of pots, kettles, and pans, as that every adventurer in a copper mine should also become a smelter.

The experiment, however, it seems, about to be tried, how far these two great branches of our commercial interests, in which the county of Cornwall is so especially connected, being united, will be of advantage to the parties concerned in them. I earnestly hope that the trial will be full, fair, and conclusive. Nothing can be more prejudicial to commerce than a want of confidence in the continuation of the system and regulations under which it is established. In the case in question, it must affect the transactions both of the miner and the smelter. The latter will necessarily endeavour to provide against the danger of a short supply of ores, and probably, therefore, diminish his rate of smelting, no longer buying so freely in the ore market. The miner, by the decreased demand, will cease to be encouraged to new discoveries. Moreover, combination begets combination. Hitherto it is understood the smelting companies have gone into the ore market perfectly independent of each other; no consultation, no understanding between them as to the standard at which

they are to offer. The benefit of this competition is to be seen in the price at which copper is sold, and that at which ores are bought; but if combinations on the part of the miners are to be contended with, is it not to be feared that the smelters in self defence may be driven to combine? In a word, is it not obvious that difficulties involving all parties are to be apprehended? Again, then, I say I earnestly hope the experiment now in progress may be fully and finally tested, and that the miner and the smelter may be relieved from a state of distrust and uncertainty, which, whilst it lasts, cannot but be injurious to both. It will tend much to settle this question, if the miner, who having now become also a smelter, marks well what his share of the produce in each mine in which he is concerned, would have produced had it been sold on a certain day, as heretofore, at the ticketing; and makes the comparison between the sum he would have thus received, and that he actually receives after his ores have been converted into copper and sold. Let him, then, take into his calculation and consideration the increased outlay of his capital, together with the delays, the dangers, and the complexity of the transaction in the one case, and the simplicity and certainty in the other, and he will be enabled to decide how far he has gained or lost by the change; and thus also will he have the means, with some degree of certainty, of informing others how far they would be benefitted by following his example.

I am, Sir, your obedient servant,

A SINCERE FRIEND BOTH TO MINER AND SMELTER.

Jan. 18.

[The question taken up by our correspondent has been treated with much ability in our columns, and, in the present instance, is fairly discussed, although we can imagine a little bias observable in favour of the smelter.]

ON BLOW-PIPES.

TO THE EDITOR OF THE MECHANICS' MAGAZINE.

SIR,—Having been a reader of your valuable Journal since its commencement, I have been greatly indebted to the various contributions for the information I have received through the medium of its pages. I therefore feel pleasure in sending the following for insertion. I have occasion to use a blow-pipe to harden drills. As I use near fifty per day I find it detrimental to my health to use the common blow-pipe, I have, therefore, procured a spirit blow-pipe, which answers extremely well, but is too expensive; I have, on that account, determined on having an oxyhydrogen blow-pipe, and shall feel obliged to any of your readers who will point out the objections, if any, why the following method should not render the use of these machines safe, and without risk of explosions. Instead of conveying the gases through sponge and wire gauze, I propose using in their place small washers of sugar cane packed with common tobacco, with the nozzle of the blowing tube to screw against the washers on a projecting rim in the safety tube.

Leeds, Jan. 11.

[Practical suggestions of this nature are valuable to the miner, and we have no doubt if any objection exists to the plan proposed by Mr. Kegg, that a communication will appear from Mr. Pridcaux, or other correspondents, in our next.]

[ADVERTISEMENT.]

EAST TRETOIL MINING COMPANY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I am desired by many shareholders, who have called on me for information, to copy this, their report, and to forward it to you for insertion as speedily as possible. I remain, Sir, your's, &c.,

Duke-street, Lincoln's Inn-fields.

JOHN HARPER.

SIR,—Observing in your Journal of the 2d inst., a notice of a meeting of the adventurers of East Tretoil Mine, whereas it was stated by the chairman (Mr. G. H. Heppel) that the sett was granted to four individuals—viz., Messrs. Mount, Wilkinson, Tregellas, and Robinson—we hereby inform you that, in the year 1829, the original sett of that mine, now called East Tretoil, was granted to Messrs. John Harper, Thomas Clark, James Clark, and James Williams Tregellas. This sett, together with the Tregellan Mine, was transferred to Christian John Robinson, or the directors of the Tregellan Mining Company, and in trust for them, and it is still part and parcel of the Tregellan Mine, and the property of the shareholders of that company. The business of this mine has been carried on by the same agents, both in Cornwall and London, and in the same offices, since 1829 to the present time, and with the same secretary, who, after extracting about 16,000*l.* from the pockets of the shareholders, have managed to detach and appropriate to their own use this most valuable part of the mine, and also part of the materials. We have been recommended, and have applied, to Captain John Harper, who was understood to be the best authority for proof of those statements, and have referred other shareholders to him also for information, as they are about to lay before the Lord Chancellor a statement of grievances, and petition for restoration of the property they consider to belong to them and their fellow-shareholders—some whose shares have been forfeited by the directors, which also they consider illegal. In the original prospectus it is stated, that "there has been seen, four or five fathoms below the adit level, a very rich vein of nearly solid ore;" in another part of the prospectus the "ore is supposed to be worth from 12*l.* to 20*l.* per ton, which can be obtained without waiting for the erection of a steam engine, and there can be little doubt that the mine, in a few months, will itself pay the expense of working, without requiring the shareholders to advance more than a small part of the estimated capital."

Now, Sir, two steam-engines were purchased, one of which has been working nearly two years—some 16,000*l.* has been expended, and there is no ore worth speaking of—and all, as we consider, from the ignorance or roguery of a certain clique connected with the working of this mine; we, therefore, consider, in justice to ourselves, that this matter should be brought to the notice of the public, and request its insertion in your valuable Journal.

We are, Sir, your obedient servants,

January 27.

SEVERAL SHAREHOLDERS.

SULPHUR.—At the meeting of the Academy of Sciences (Paris), on the 11th instant, M. Regnault, who has distinguished himself by his researches respecting the specific heat of different substances, read a paper, containing the results of some further experiments on the same subject. In this paper he mentioned a curious fact, relative to sulphur, when solidified, after it has been previously reduced to the state of a paste. It is known that sulphur, when kept in fusion for a certain time, changes its colour, becomes of a hyacinth red, and acquires the property of remaining soft for a long time, by plunging it into cold water. M. Regnault has observed, that sulphur, in this state, when submitted to a temperature of about 98 degrees (centigrade) in a stove, liberates a great quantity of heat in becoming solid, so as to raise the thermometer suddenly to 110 degrees. When the solidification is effected, the thermometer returns to the temperature of the stove, and there continues.

LIQUEFACTION OF AIR.—M. Tilorier (the chemist, in whose lecture room, at Paris, the recent explosion of carbonic acid gas took place, which killed M. Henry, a very promising student) has undertaken the dangerous experiment of attempting to liquefy atmospheric air by pressure. The apparatus for this purpose has been nearly completed. To effect the liquefaction of air, he contemplates compressing it more than 2400 atmospheres, instead of 100, to which extent he carried his compression of carbonic acid gas.

GALVANISED METALS.—M. Sorel has succeeded, by means of a constant electric-current, in fixing upon iron in the cold state a more or less thick and very adherent layer of zinc; and, in the same way, he has been enabled to fix several other metals. M. Perrot, of Rouen, has been engaged with experiments upon the same subject.

HYPOPHOSPHOROUS ACID.—M. Langlois states that he has procured this acid perfectly pure by decomposing the hypophosphate of potash, by means of per-chloric acid, which forms an insoluble salt with the potash. The acid thus obtained is liquid, without colour, and slightly of the consistence of syrup. Its taste is acid and bitter.

STONE FOR THE NEW HOUSES OF PARLIAMENT.—Charles Wright, Esq., of North Anston, has been offered after the rate of 1500*l.* per acre by Government, for the stone contained in two fields of about sixteen acres, at the above place, wanted for the erection of the new Houses of Parliament. This very liberal offer, we understand, has been rejected, notwithstanding the fields were to be re-delivered to Mr. Wright, on a sufficient quantity of stone having been obtained from them for the purpose alluded to. The land is totally unconnected with any building, and only of an ordinary description, so far as the soil is concerned.—*Sheffield Advertiser.*

THE ACTION OF GUNPOWDER IN BLASTING.

(From the *Inventors' Advocate*.)

The curious fact announced by Mr. Roberts, in his description of his new mode of blasting by galvanism, which was noticed in the two last numbers of our journal, deserves to be considered more at length, and to have its cause explained. The fact to which we allude is, that loose dry sand, put into the bore-hole of a blast, will be sufficient to withstand the explosive force of the gunpowder, provided there is a vacant space left between the wadding and the powder; and that the hardest rocks will be rent asunder before the loose sand will be blown out of the hole. The bursting of a gun, when the ball is rammed only a short way down the barrel, is also mentioned as an analogous fact, depending on the same cause—though it does not seem so extraordinary as the rending asunder of hard rocks before loose sand gives way. We propose to examine the nature of the phenomenon, and to explain its cause. It must be borne in mind, that it is one of the essential properties of all forces emanating from a centre to diminish in power in proportion to the squares of the distance from the acting point. The rationale of this effect is, perhaps, more clearly exhibited in the diffusion of light than in any other central emanations.

The flame of a candle sends out rays of light in all directions, in straight lines; consequently, the farther the rays extend, the light becomes diffused over a larger space, and its intensity is diminished in exact proportion to the increase of surface which it illuminates. If a piece of board, one inch square, be held at a distance of one foot from the flame, it receives all the light which would be diffused over four square inches at a distance of four feet; or over sixteen square inches, at a distance of four feet. The quantity of light is the same in both cases, but its intensity varies, it will be seen, as the square of the distance. What is thus apparent in the diffusion of light takes place equally in all radiating powers—gravitation, cohesion, explosions, heat, sound, &c.

We may thus easily comprehend, that, when an explosion of gunpowder takes place, the force exerted on bodies nearly in contact with the centre of explosion, is four times the amount of that which operates at twice the distance, and sixteen times as great as is exerted at four times the distance.

It will also be observed, that, in proportion to the closeness of approach to the centre whence the explosive force emanates, will be the amount of power exerted on a given surface, and that a smaller increase of distance will produce a greater difference in the effect. For instance, suppose a ball were rammed into a gun to within the tenth-part of an inch from the centre of explosion, the force exerted in expelling it would be, according to theory, four times as great as if the ball were at a distance of two-tenths of an inch from the central force. Thus the difference of one-tenth of an inch would produce a quadruple diminution of power. But when we commence with the ball at a farther distance from the centre of explosion, say half an inch, it would then require a distance of another half-inch, instead of a tenth, to produce a quadruple diminution of power. This is not, however, absolutely the case in practice, for the explosive force does not emanate from a point, but from the whole mass of powder employed acting from the centre outwards. Though the distances we have assumed may not, therefore, be correct in practice, nor applicable to a ball rammed close to the powder, yet they will be found correct at greater distances, compared with which the quantity of powder exploded may be considered as a point. Having thus re-stated the action of central forces, to make the subject intelligible to those of our readers who may not have attended to it, the application of this action to the explanation of the phenomenon in question, may be readily understood.

When a ball is rammed down into a musket-barrel, close to the powder, the explosive force of the gunpowder acts on it with full effect, and it is expelled, with accelerating speed, out of the barrel. The gases generated in the explosion thus obtain room for their expansion. But if the ball be rammed down only part of the way, the sudden explosion will not act with sufficient power on the ball to expel it; and the expansive force of the powder confined within the breech of the gun, causes it to burst.

Assuming, for instance, that the ball, when rammed down to the powder, is still half an inch from the centre of explosion, and that when partly rammed down it is twenty inches from the same centre; in the latter case the force acting on the ball would be sixteen hundred times less than if the explosion were to take place when it is close to the powder. Supposing the ball to be one-tenth of an inch from the centre of explosion when rammed down close, the difference in the sudden explosive effect would be increased to 40,000. The same principle may be explained by drawing numerous radii from the supposed centre of action in the powder in all directions round it. The number of radii touching on any point may be taken as signs of the comparative amounts of force exerted. It will then be found that the number of radii which reach the ball when at a distance from the powder, bear about the same proportion to those touching it when close, that we have indicated as the amount of the respective forces acting upon it. When the ball is more distant, the radii, which before touched it, strike against the inside of the barrel. Thus we perceive that when the ball is not rammed down, there is a large additional portion of the gun-barrel exposed to the sudden explosive force of the powder, tending to burst it asunder in its weaker parts.

In the foregoing instances ignited gunpowder is considered only as a central force; and in this respect its sudden explosive action, which produces its general effects, may be regarded. But if the resistance it meets with be too great to be overcome, the compressed gases produced from its ignition will act otherwise than as central forces, and will press equally on every part of the internal surface.

The circumstances we have stated in reference to the explosion of gunpowder in a musket will equally apply to the process of blasting; and will show the cause why a force which is able to rend the hardest rocks is unable to blow out a few inches of loose sand. In consequence of the space left between the wadding and the powder, the amount of the explosive force that is brought to bear on the surface of the wadding is extremely small, compared with its action on the rock immediately surrounding the powder. A mass of twelve or fifteen inches of dry sand, Mr. Roberts states, is sufficient to confine the effects of the largest charge of powder, unless the rock be absolutely unyielding.* There is another advantage attending this mode of blasting, which Mr. Roberts has not pointed out, but which may be perceived from the preceding consideration of the bursting of a gun-barrel. When the tamping is driven close to the powder, a part of the rock is protected from the action of its explosive force by the tamping itself. When there is a vacant space left, a larger portion of rock is exposed to receive the effects of the explosion, part of which, in the usual method of proceeding, is uselessly exerted against the tamping, tending to force it out.

There is no necessity for restricting Mr. Roberts' improved mode of tamping to his method of exploding the powder by galvanism. The latter mode, though in all respects a great improvement in the use of the fuse, requires some arrangements and manipulations, which at present, at least the miners may not be found willing to adopt, or always capable to execute; but the new plan of tamping presents such manifest advantage—is so great a saving of trouble, as well as a great avoidance of danger—that we cannot imagine any one would hesitate to adopt it. We are, therefore, anxious to separate the two plans, for the purpose of inducing the more general introduction of that one which, from its simplicity as well as its efficacy, is calculated to confer immediate benefits on all miners.

NAVIGATION BETWEEN GREAT BRITAIN AND THE PACIFIC.—Capt.

Peacock has addressed a letter to the directors of the Pacific Steam Navigation Company dated Valparaiso, Oct. 17, announcing the safe arrival at that port of their two vessels, the *Chili* and *Pern*. Capt. Peacock also furnishes the following important particulars respecting the coal of that country:—"After the engines were painted and were dry, I got the steam up with the coal of the country, in order to try it. The small quantity which we procured was got from the foot of a precipice. It was inferior to Welsh coal, but we had no difficulty in keeping up the steam as long as it lasted. I was informed that good coal might be procured at a place named Colcura, on the coast, about twelve leagues south of Concepcion; and I intended to have visited it with the Polish geologist, M. Lohelsky, in the service of the Chilean Government, but, having met with an accident, I sent Dr. Wellbourne, who, in company with M. Lohelsky and Mr. Cunningham, the British vice-consul, proceeded to Colcura, Laraquete, and Aranco for the purpose of examining the coal formations in those localities; and I am happy to state that their report establishes the fact of the existence of coal suitable in every respect for steam navigation."

* When the rock resists the sudden shock, then the compressed gases act equally on all parts of the bore, and there is no advantage gained by leaving the vacant space.

